

## WHAT IS CLAIMED IS:

1. A roll for use in a galvanizing pot, comprising a hollow body brought into contact with a steel strip, and shaft portions connected to said body, at least said body being made of a silicon nitride ceramic having thermal conductivity of 50 W/(m·K) or more at room temperature, and said body having an average surface roughness Ra of 1-20 µm.
- 5 2. The roll for use in a galvanizing pot according to claim 1, wherein said silicon nitride ceramic comprises 0.2% or less by weight of aluminum and 5% or less by weight of oxygen.
- 10 3. The roll for use in a galvanizing pot according to claim 1 or 2, wherein said silicon nitride ceramic has a relative density of 98% or more, and a 4-point bending strength of 700 MPa or more at room temperature.
- 15 4. The roll for use in a galvanizing pot according to any one of claims 1-3, wherein said silicon nitride ceramic has a coefficient R of 600 or more, said coefficient R being expressed by the formula of  $R = \sigma_c(1-v) / E\alpha$ , wherein  $\sigma_c$  represents a 4-point bending strength (MPa) at room temperature, v represents a Poisson's ratio at room temperature, E represents a Young's modulus (GPa) at room temperature, and  $\alpha$  represents an average thermal expansion coefficient from room temperature to 800°C.
- 20 5. The roll for use in a galvanizing pot according to any one of claims 1-4, wherein the inner surface of said body comprises large-diameter regions on both sides and a small-diameter region in the center, and each of said shaft portions has a small-diameter portion, a flange and a large-diameter portion, the large-diameter region of said body being connected to the large-diameter portion of said shaft portion.
- 25 6. The roll for use in a galvanizing pot according to claim 5, wherein each of said shaft portions is provided with pluralities of longitudinal grooves extending through said large-diameter portion and said flange, said grooves

forming apertures communicating with the inside of said roll in a state where said shaft portions are connected to both end portions of said body.

7. The roll for use in a galvanizing pot according to claim 5 or 6, wherein each large-diameter region of said body is shrink-fit to the  
5 large-diameter portion of each shaft portion.

8. The roll for use in a galvanizing pot according to claim 7, wherein the shrink-fitting ratio of each large-diameter region of said body to the large-diameter portion of each shaft portion is in a range of 0.01/1000 to 0.5/1000.

10 9. The roll for use in a galvanizing pot according to claim 7 or 8, wherein a ratio of the inner diameter  $S_b$  of each small-diameter region of said body to the inner diameter  $S_a$  of each large-diameter region of the body is 0.9 or more and less than 1.0.

15 10. The roll for use in a galvanizing pot according to any one of claims 7-9, wherein the large-diameter region of said body is longer than the large-diameter portion of said shaft portion, so that there is a gap between the end of each small-diameter region of said body and the inner end of said shaft portion.

11. The roll for use in a galvanizing pot according to any one of claims 20 7-10, wherein a ratio of the effective length  $L_s$  to the outer diameter  $D_L$  of the large-diameter portion of each shaft portion is 0.5-2.0.

12. The roll for use in a galvanizing pot according to any one of claims 7-11, wherein a ratio of the outer diameter  $S_{out}$  of said body to the outer diameter  $D_s$  of the small-diameter portion of each shaft portion is 2-10.